



# The 2023 Sourdough Fire: Post-Fire Collaboration at Breakneck Speed

Jack Oelfke,  
BAER Team Leader  
(National Park Service,  
retired)

Sourdough Fire, Diablo Reservoir







# North Cascades National Park Service Complex, WA

~ 690,000 acres in the North Cascades range

94% of park is designated Wilderness

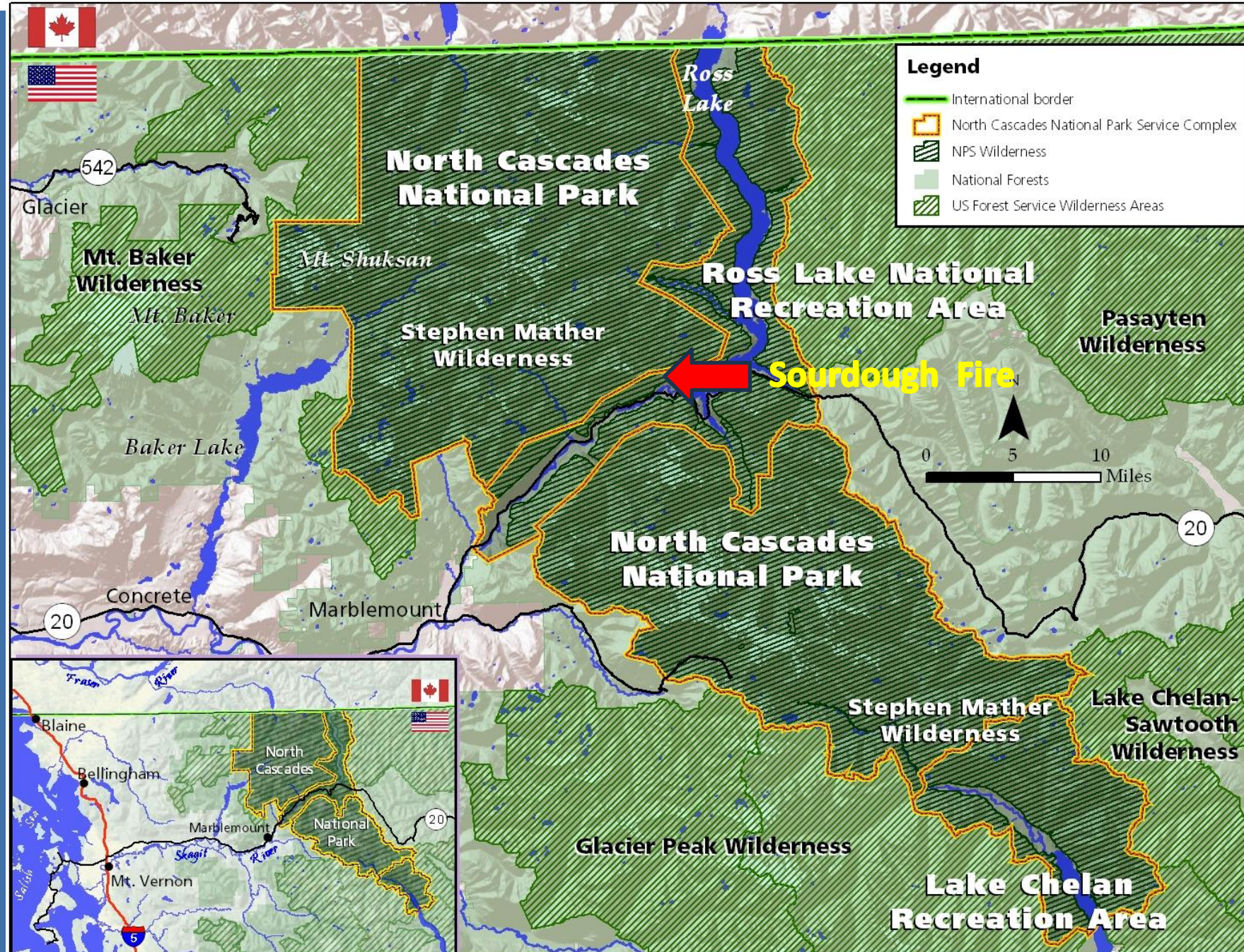


NOCA GIS, 14 March 2007  
url://basemap/noca/state-locator\_3\_07





- Sourdough Fire primarily upstream of the hydroelectric complex operated by Seattle City Light
- Fire was 7,337 acres as of 9/17/23







# Sourdough Fire, summer/fall 2023

Seattle City Light (SCL):  
3 dams/reservoirs,  
major hydro  
infrastructure

Provides 20% of  
Seattle’s power needs







# Sourdough Fire

## Major infrastructure downstream/downslope of fire



State Highway 20

Hollywood townsite

Powerhouse + other hydro infrastructure

Numerous structures, road, parking areas

Envir. Learning Center residential campus

Several miles of high-voltage powerline

Diablo Dam

Diablo Lake

Diablo Lake







# Sourdough Fire



Hollywood townsite

Diablo powerhouse/infrastructure



Diablo Reservoir







# Sourdough Fire



Pre-fire, a tense relationship exists between NPS and SCL over current relicensing – and mitigations - of the hydro project





# Interdisciplinary Burned Area Emergency Response (BAER) Team

- BAER: To determine the need for and to prescribe and implement **emergency** treatments to minimize threats to **life** or **property** or to stabilize and prevent unacceptable degradation to **critical natural and cultural resources** from the **effects of a fire**

➔ Sept 6-20, 2023

- Burned Area Rehabilitation (BAR)
  - (1) Identify those areas **unlikely to recover naturally** from severe **fire damage**, and stabilize or restore ecosystem functionality,
  - (2) Repair or replace **minor facilities** damaged by **fire**







# Interdisciplinary Burned Area Emergency Response (BAER) Team

- Team Leader/Trails
- Hydrologists
- Watershed Modeler
- Cultural Resource Specialists
- Botanist
- Forester/Public Safety
- Fire Ecologist/Old growth/Whitebark pine
- Documentation Specialist
- GIS Specialist
- National BAER Coordinator/Wildlife

→ Sept 6-20, 2023







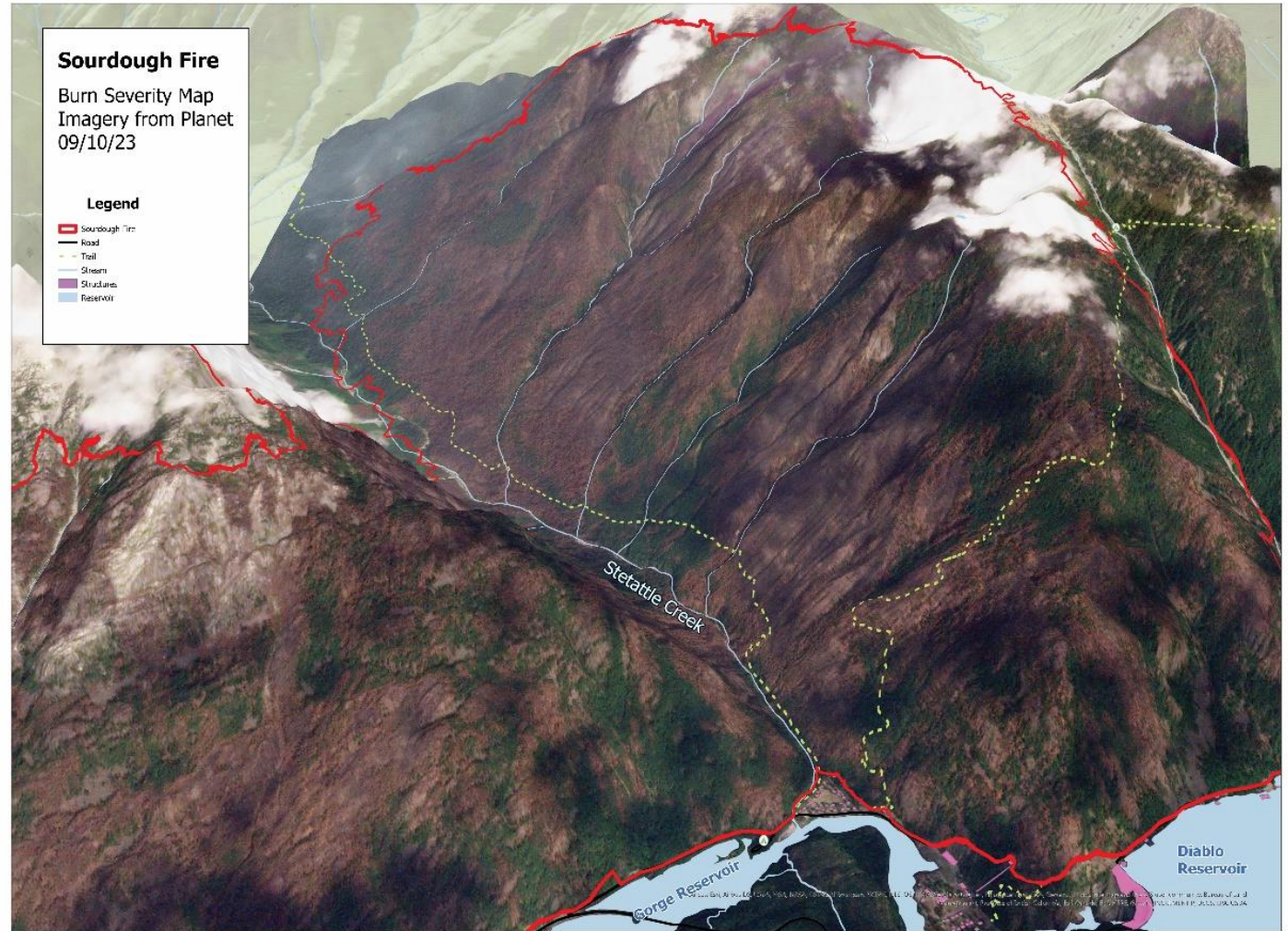
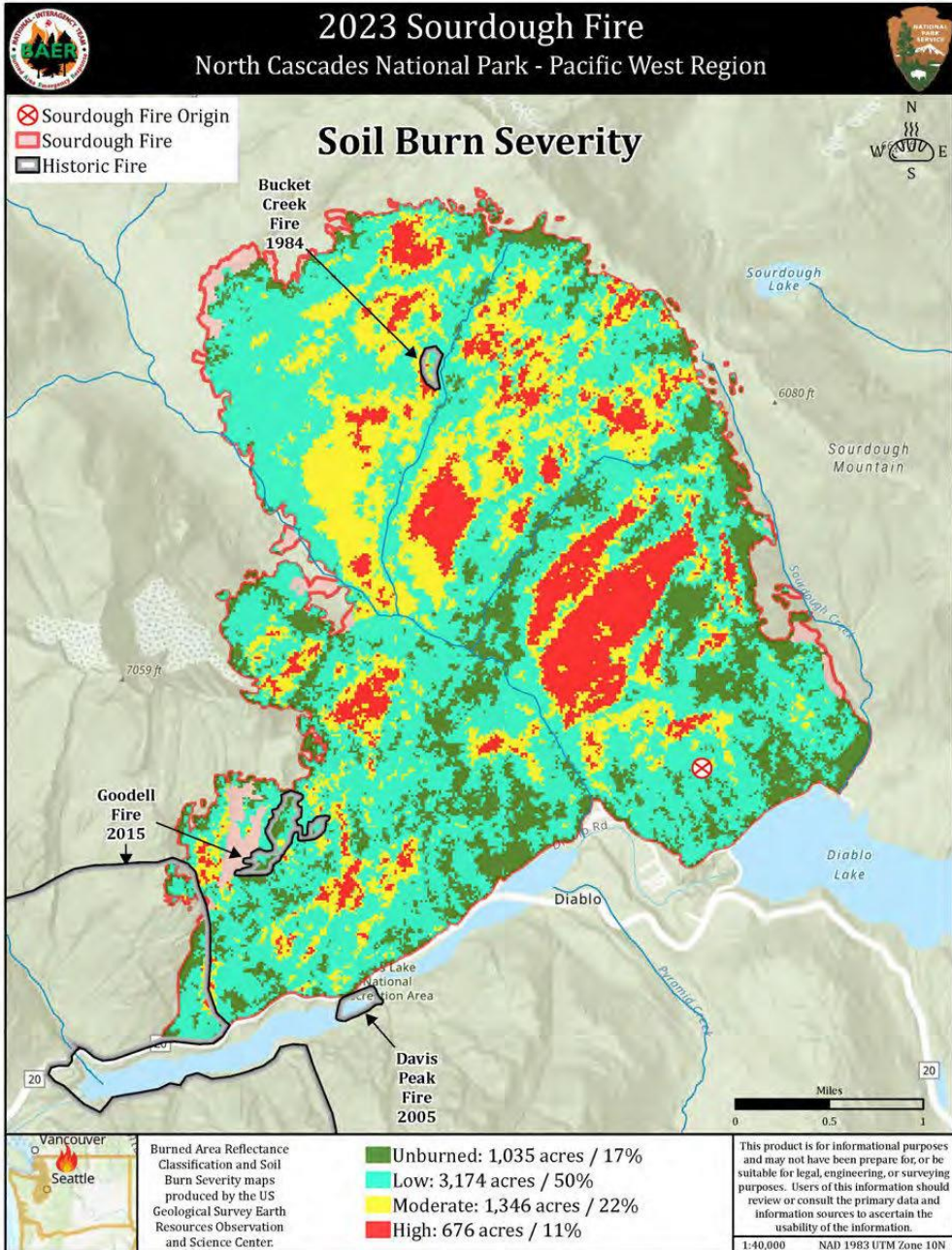
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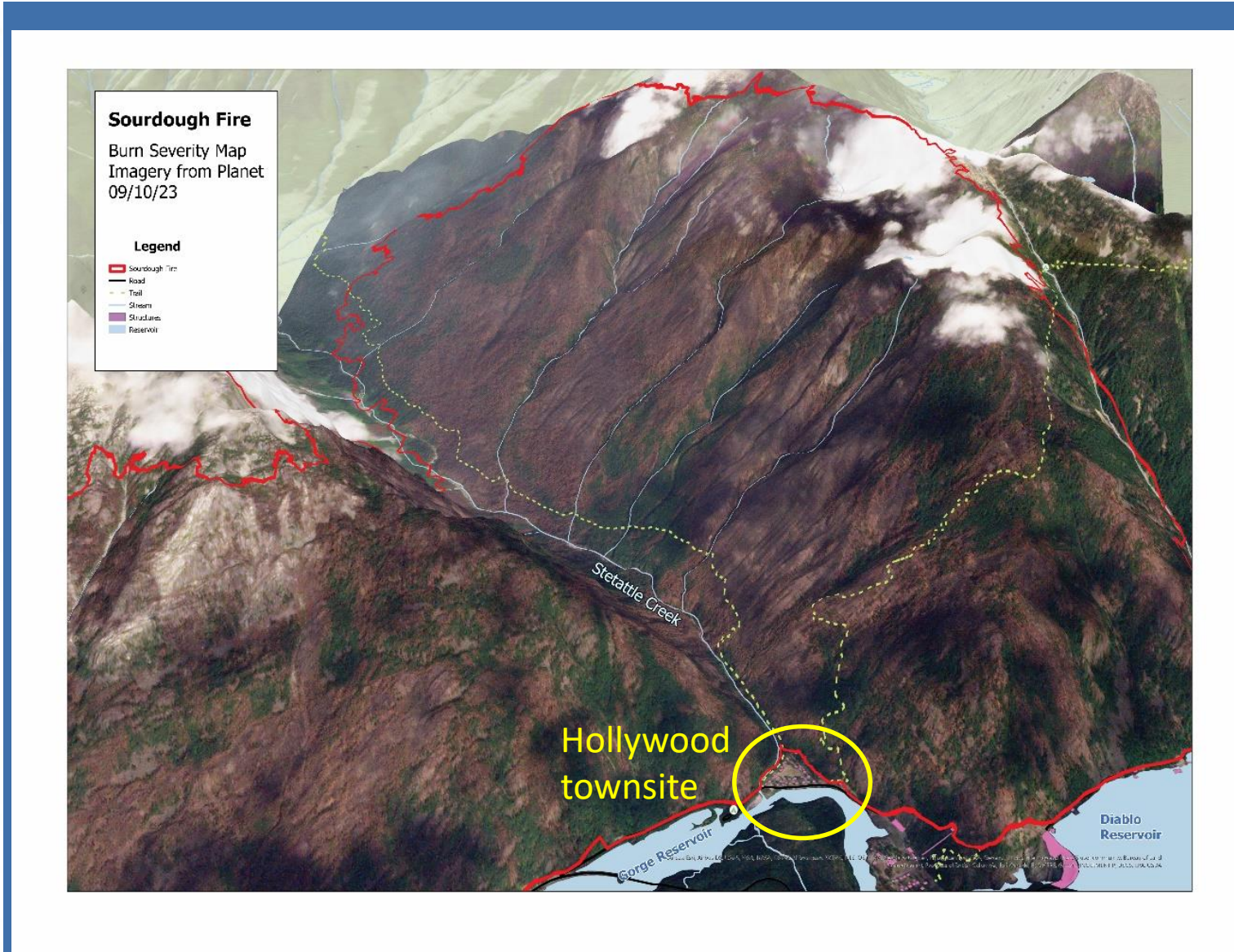
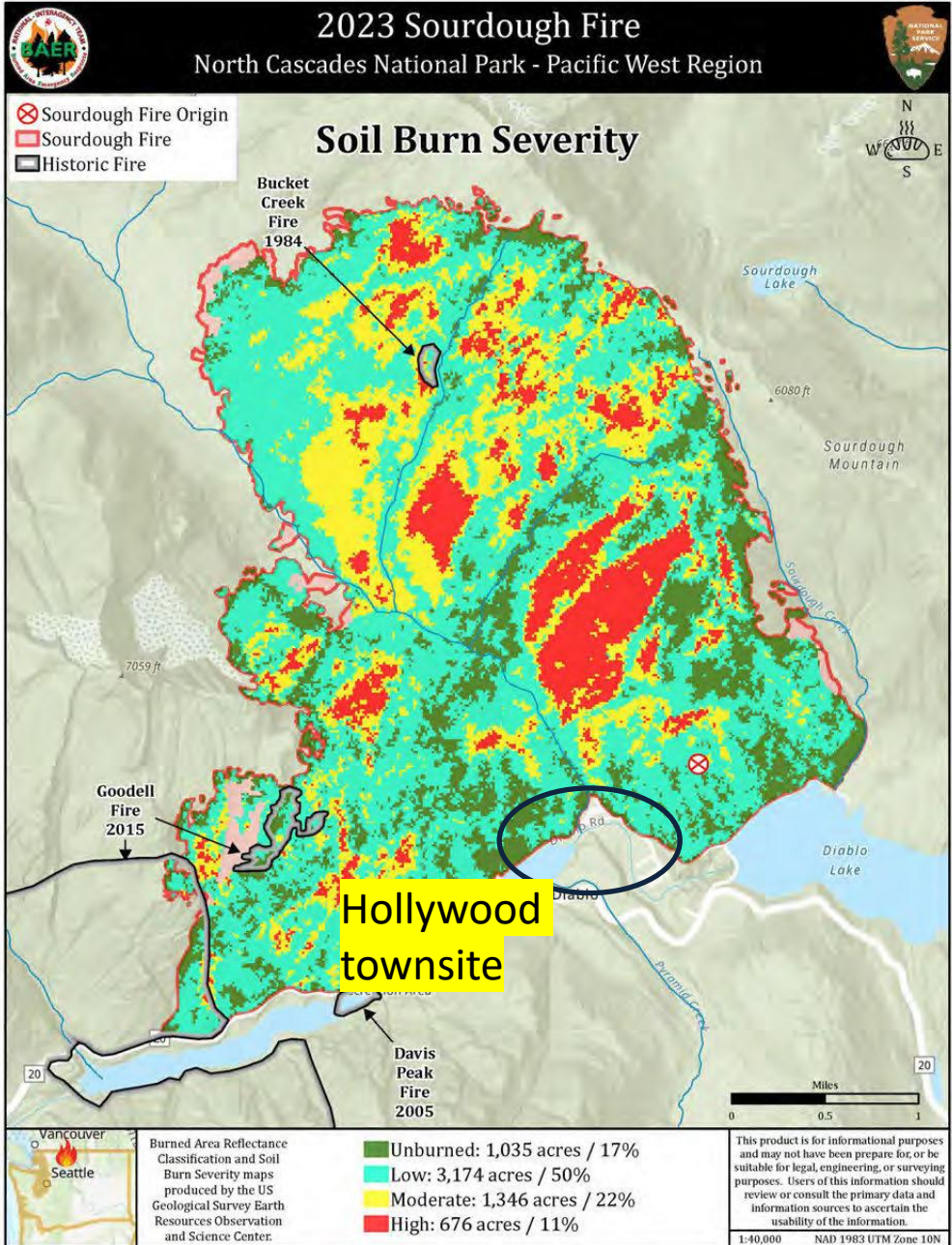
→ Sept 6-20, 2023















- “Hollywood” townsite – SCL company town of ~ 26 homes, 10+ additional structures situated on this alluvial fan of Stetattle Creek – with high burn severity on 7,000+ acres directly upstream of it.
- Levee (constructed in 1951) had never been tested by a post-fire flood event in known history of site
- *And note the different land ownerships.....*

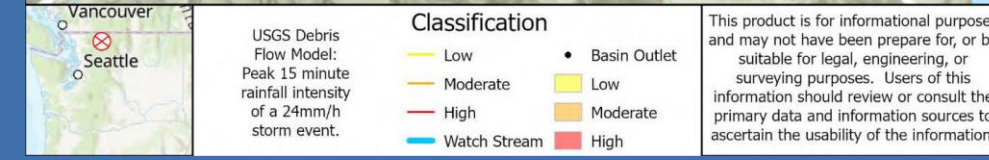
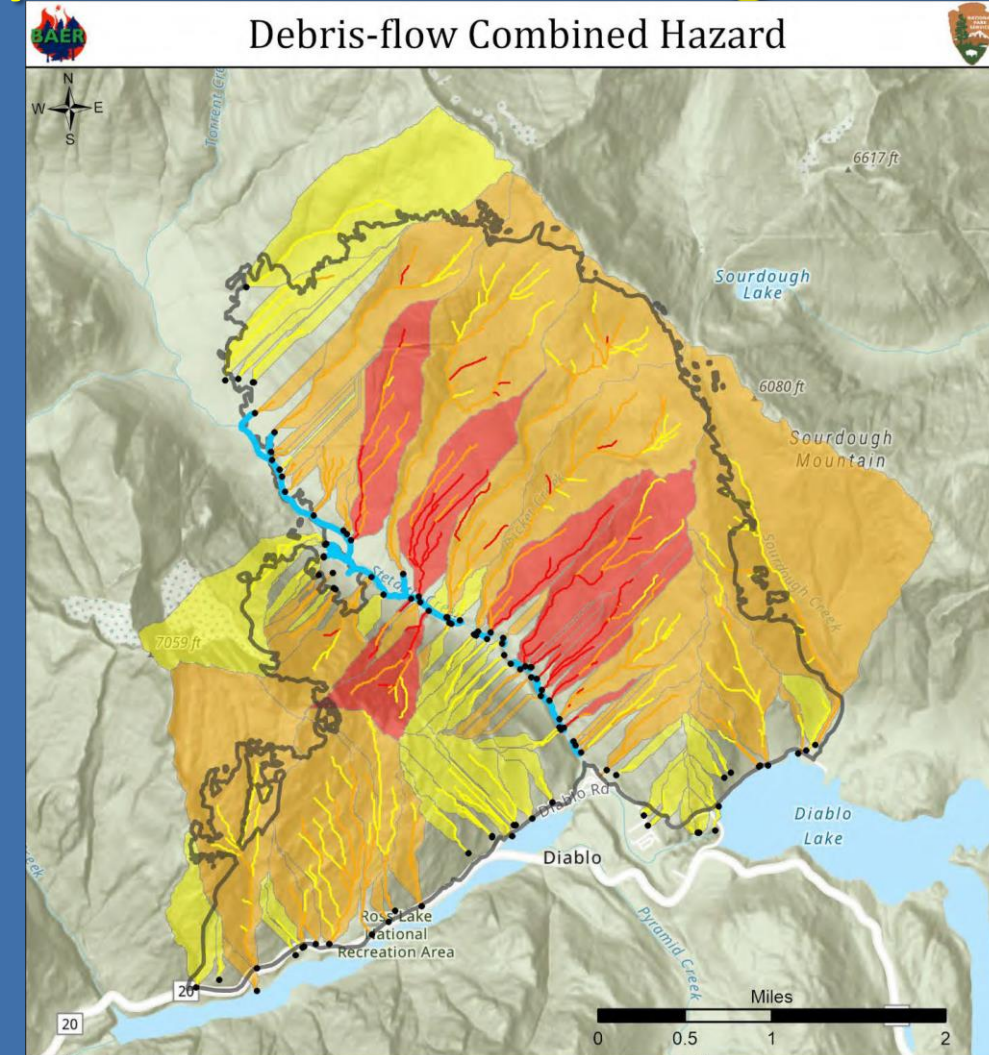
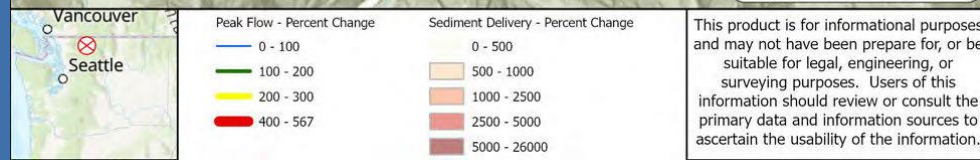
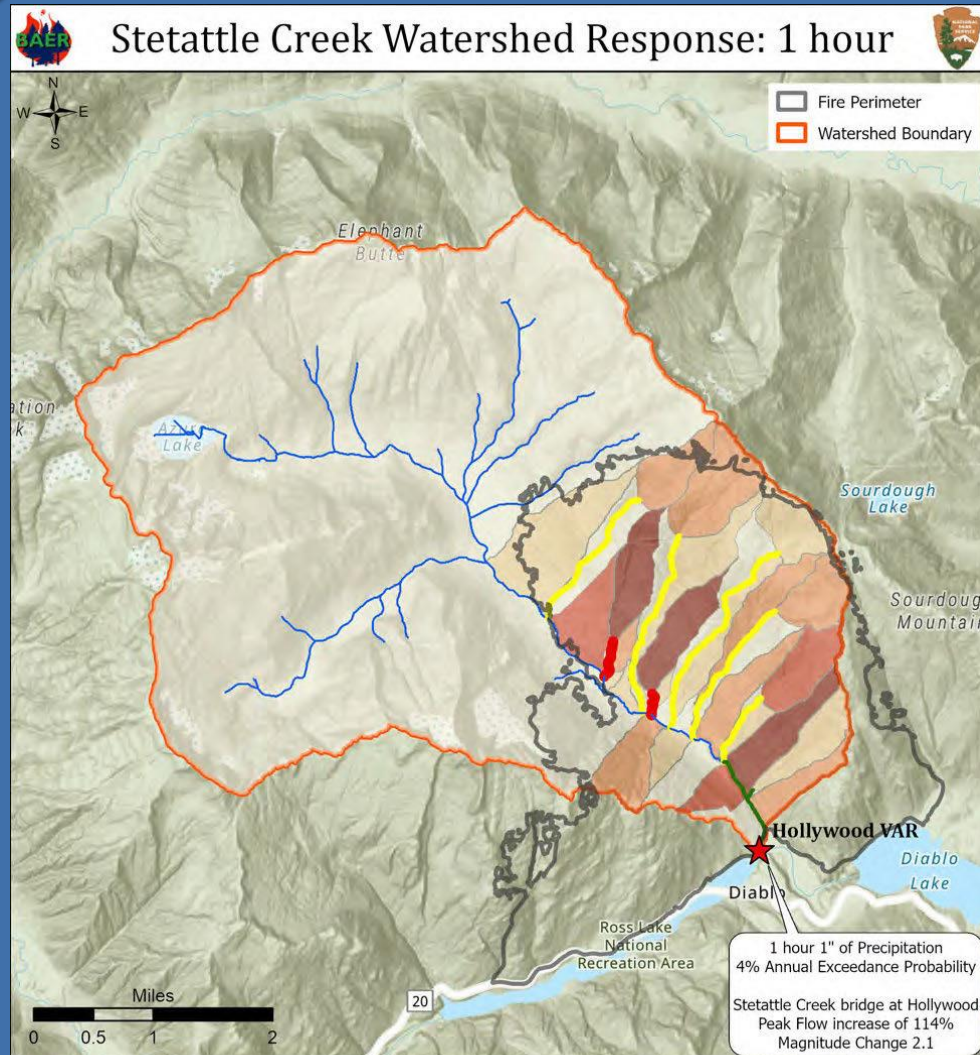






# Sourdough Fire – Watershed Analysis and Modeling

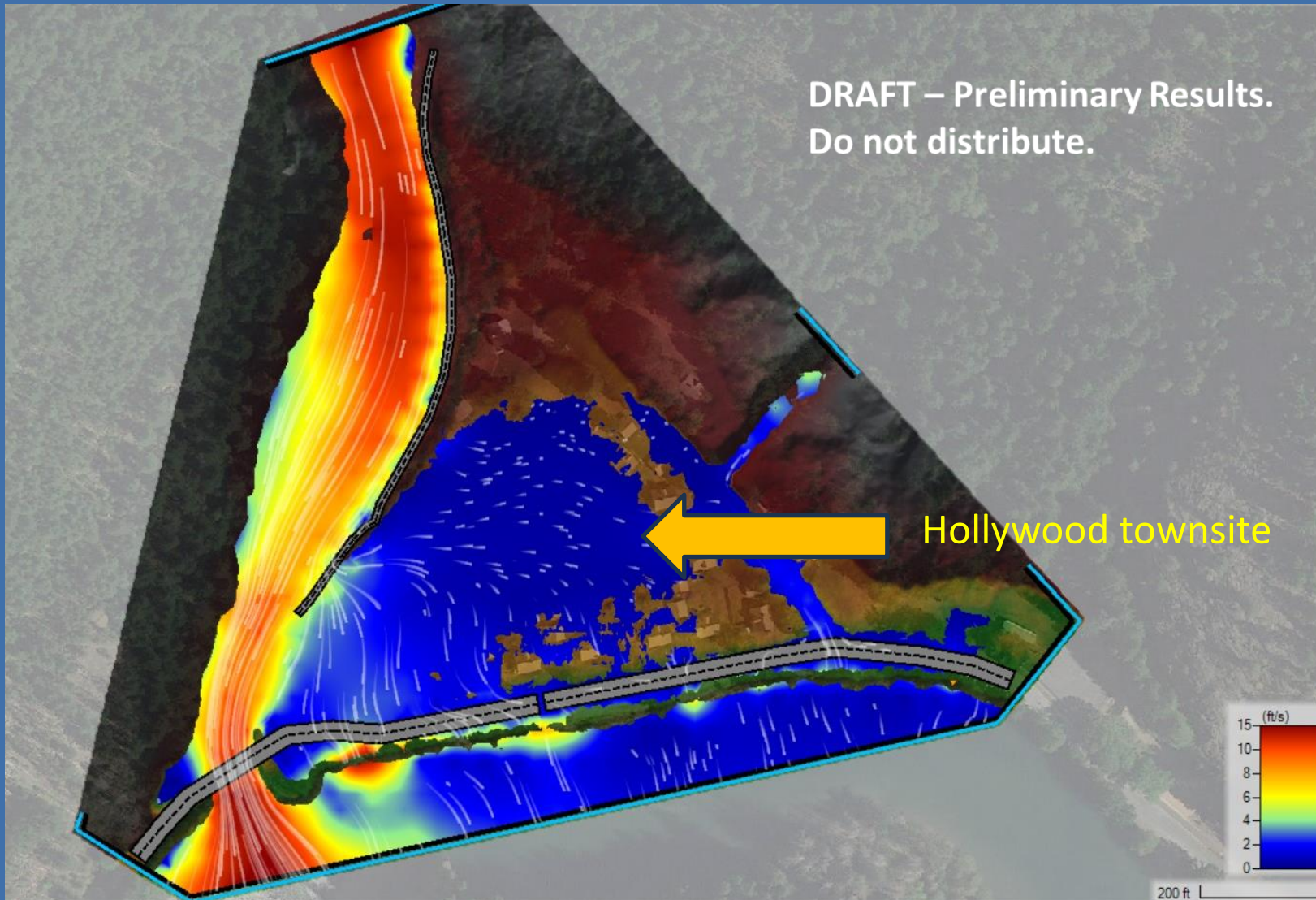
BAER Team analysis indicated serious post-fire flow concerns for the Hollywood townsite







# Sourdough Fire – Watershed Analysis and Modeling



Independently, the NRCS completed watershed modeling and reached very similar conclusions.

4% Annual  
Exceedence  
Probability Storm

Bulked flow ~ 10,300  
cfs at bridge

Pre-storm condition  
is wet





***(2 days before final BAER closeout mtg, as told to SCL):***

## **Time is of the essence**

### **From the BAER Plan:**

- “Specific measures should be taken in the Hollywood area to protect human life and safety and property”
- “...the hazard is clear and efforts to design treatments should take priority over increasingly advanced modeling and assessment”
- Recommendations:
  - EVACUATE residents of Hollywood
  - PARTNER with NWS for early warning system
  - INSTALL point protection measures (levee augmentation, structure protection), barriers to deflect debris flows away from houses from Rumsey Creek; rockfall protection
  - HAZMAT – ensure all structures are empty of hazardous materials
  - SAFETY – ensure protocols in place for workers in/near Stetattle Creek
  - COMPLIANCE – potentially simple/straightforward if you avoid activity in Stetattle Creekbed; more extensive if actions are proposed within the channel
  - MONITORING – collaborate with NRCS, Wa DNR, NWS; rain gage, stream gaging station



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# You (all the partners) need to move fast, and need to move together....

(from final BAER closeout meeting with SCL and NPS, 9/19/23)







## So what happened next?

- Cooperation and collaboration in an extremely productive manner
  - Daily meetings between Seattle City Light and NPS from Sept 24 – Oct. 16, 2023 to plan for/implement site protection (with subsequent weekly meetings thereafter)
  - Installation of Hesco barrier wall on both SCL and NPS lands to protect the townsite from post-fire erosion flows, starting ~ Oct. 8, completed Oct. 16
  - Evacuation of all Hollywood residents by Nov. 27, 2023
  - Cooperative Agreement to handle legal/fiscal matters completed late February, 2024

*Amazing accomplishments between two large bureaucracies on such a short timeline .....*







# Installation of Hesco barrier walls







# Installation of Hesco barrier walls (cont.)







# Installation of Hesco barrier walls (cont.)

- SCL covered all installation costs (~\$650K), including on NPS lands, until Coop. Agreement was signed and the BAER funds could be legally provided for NPS (federal) lands to reimburse SCL (~\$125K).
- NPS Trail Crew repaired damage to “Flood Evacuation Route” trail for townsite/workers to enable safe egress from townsite in an emergency







# Rapid collaboration worked because....

- Use of good science (hydrologic analysis/modeling) corroborated by separate entities (BAER Team, NRCS)
- Good, onsite communication and meetings at the local level between NPS and SCL, including scientists, archeologists, facilities staff – during BAER and post-BAER
- Use of a BAER Team that brought in outside expertise, stressed the urgency, and remained engaged



Evaluating soil burn severity within Sourdough fire



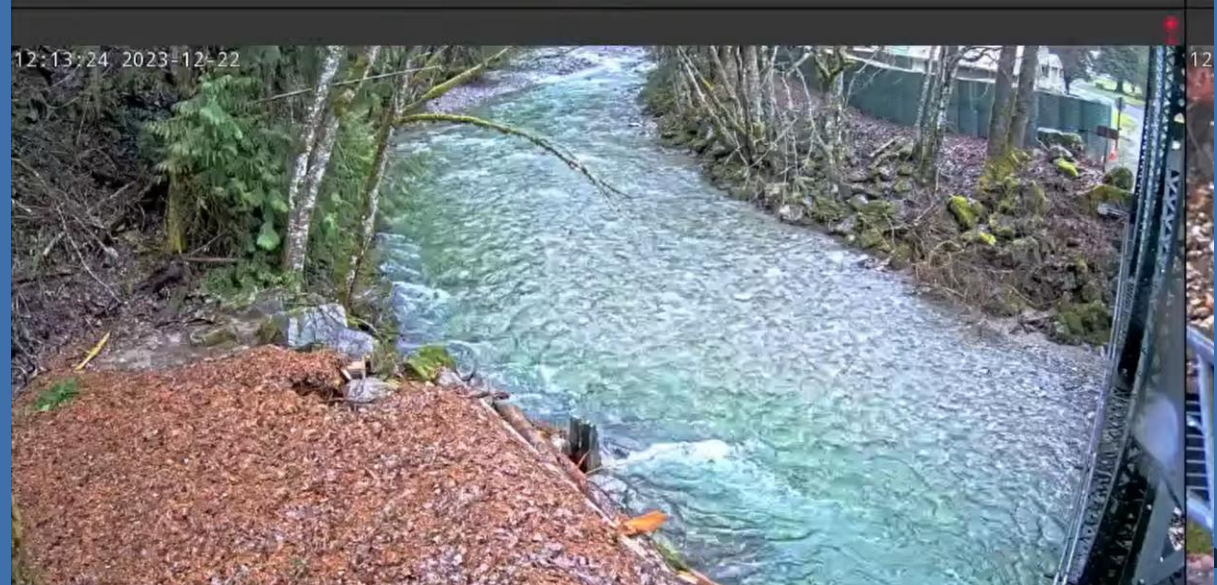




- A large rainfall on Dec. 11, 2023 fell just shy of the predicted flooding threshold. Atmospheric river events are becoming more common, and seemingly increasingly larger.....



Stettale Creek PTz







# Thank you



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